

# DIFFERENTIAL UTILIZATION OF BAT BOXES BY HOUSE WRENS (*TROGLODYTES AEDON*)

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**ABSTRACT.**— Pine boxes nailed to trees in four habitat types in southeastern Utah as roosting sites for bats proved ineffective for bats but were utilized by house wrens in all but one habitat. Boxes were most often utilized in the aspen habitat. Hypotheses to account for differential utilization are presented.

In late Fall of 1977, 35 rough-sawn, pine-wood, day-roosting boxes for bats, constructed after the design of Stebbings (Quarterly J. Deven Trust for Nature 6:114-119, 1974) were placed in each of four habitat types on the Abajo Mountains of southeastern Utah in the hope of attracting several montane species of vespertilionid bats. The aspen forest habitat was within a watershed relatively ungrazed by livestock and had a rich understory of low-growing shrubs, forbs, and grasses. The oak-pine habitat, which is grazed annually by cattle, had, relative to the aspen, a poor understory and more heterogeneous structure. The cottonwood habitat was within a rather broad stream bed and was not grazed by livestock. The spruce-fir forest was also ungrazed and consisted of large mature trees, which formed a fairly closed canopy with essentially no understory vegetation. Permanent water was available within each habitat. Boxes were attached to tree trunks with nails at heights of 3-4 m and arranged in a zig-zag fashion within each habitat at 12-15 m intervals. Unlike traditional bird boxes, these had a slit entrance on

the ventral side that measured about 25 × 175 mm.

As roosting sites for insectivorous bats the boxes were disappointing, but as nesting sites for house wrens (*Troglodytes aedon*) the boxes were immediately successful. Table 1 indicates by habitat and year the number of boxes from which young wrens were fledged. Hypotheses to explain the differential utilization of these boxes include: (1) differences in productivity of the understory vegetation and, therefore, insect biomass on which wrens feed and (2) differences in the availability of natural cavities for nesting. The aspen habitat appears to have the most productive understory and the most homogeneous forest structure. The importance of nest boxes in the aspen habitat suggests that removal of understory vegetation by grazing or through competitive processes may have a rather severe effect on the abundance and distribution of foliage gleaning species like the house wren. These data suggest that the addition of nest boxes to habitats may selectively enhance population densities.

TABLE 1. Summary of patterns of utilization of bat-roosting boxes by house wrens. The open number under each habitat indicates the number of boxes out of 35 that were used. The number in parenthesis represents percent of total.

Year	Habitat Type			
	Aspen (El. 2700m)	Oak-Pine (El. 2400m)	Cottonwood (El. 2400m)	Spruce-Fir (El. 3200m)
1977	10 (29)	2 (6)	0	0
1978	12 (34)	2 (6)	1 (3)	0

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